

<p>COMPONENTS:</p> <p>(1) <i>o</i>-Xylene; C<sub>8</sub>H<sub>10</sub>; [95-47-6]</p> <p>(2) Water; H<sub>2</sub>O; [7732-18-5]</p>	<p>EVALUATOR:</p> <p>G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.</p> <p>July 1985.</p>
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CRITICAL EVALUATION:

Quantitative solubility data for the *o*-xylene (1) - water (2) system have been reported in the publications listed in Table 1.

TABLE 1: Quantitative Solubility Studies of the *o*-Xylene (1) - Water (2) System

Reference	T/K	Solubility	Method
Andrews and Keefer (ref 1)	298	(1) in (2)	spectrophotometric
Guseva and Parnov (ref 2)	385-524	(1) in (2)	unspecified
McAuliffe (ref 3)	298	(1) in (2)	GLC
Hoegfeldt and Bolander (ref 4)	298	(2) in (1)	Karl Fischer
Polak and Lu (ref 6)	273,298	mutual	GLC, Karl Fischer
Sutton and Calder (ref 7)	298	(1) in (2)	GLC
Price (ref 8)	298	(1) in (2)	GLC
Krzyzanowska and Szeliga (ref 9)	298	(1) in (2)	GLC
Sanemasa <i>et al.</i> (ref 10)	299-318	(1) in (2)	spectrophotometric

The original data in these publications are compiled in the Data Sheets immediately following this Critical Evaluation. Alwani and Schneider (ref 5) have also reported data on a critical locus at high temperatures and pressures. For convenience further discussion of this system will be given in two parts.

1. SOLUBILITY OF *o*-XYLENE (1) IN WATER (2)

The high temperature, high pressure data of Guseva and Parnov (ref 2) and Alwani and Schneider (ref 5) have been obtained under quite different conditions and thus no Critical Evaluation of their data is possible. However, it may be noted that the data of Guseva and Parnov are frequently unreliable. The interested user is referred to the relevant Data Sheets for experimental values.

At atmospheric pressure all the available data are listed in Table 2 except for the value of Krzyzanowska and Szeliga (ref 9) which does not appear to be independent of that of Price (ref 8) and has therefore been excluded from consideration.

(continued next page)

## COMPONENTS:

- (1) *o*-Xylene; C<sub>8</sub>H<sub>10</sub>; [95-47-6]  
 (2) Water; H<sub>2</sub>O; [7732-18-5]

## EVALUATOR:

G.T. Hefter, School of Mathematical  
 and Physical Sciences, Murdoch  
 University, Perth, W.A., Australia.

July 1985.

## CRITICAL EVALUATION: (continued)

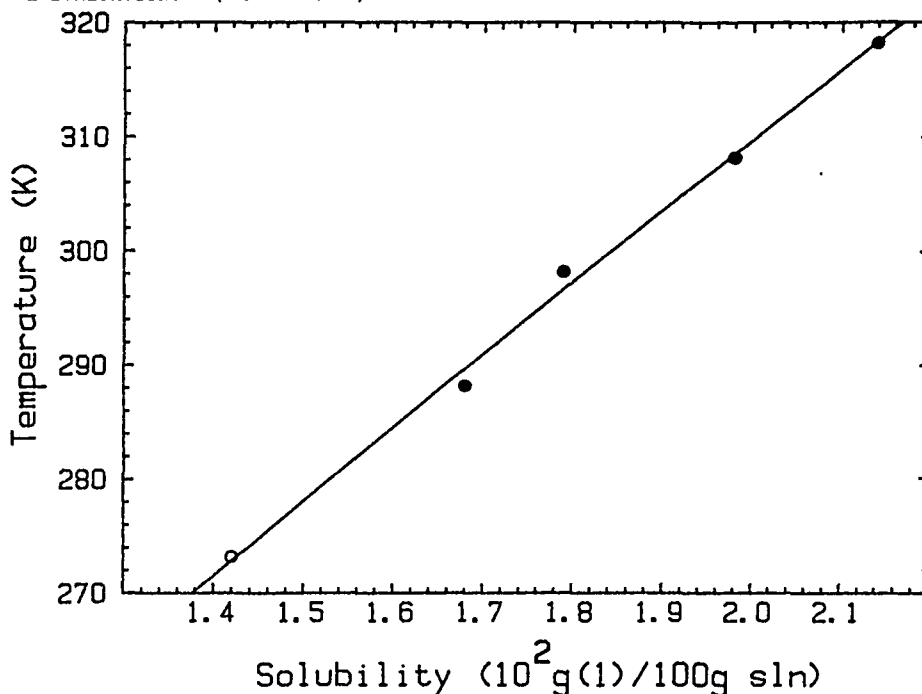


FIGURE 1: Solubility of *o*-xylene in water, selected data: ref 5 (o); ref 10 (●).

2. SOLUBILITY OF WATER (2) IN *o*-XYLENE (1)

The available solubility values for water in *o*-xylene are listed in Table 3. At 298K, where comparison is possible, the data (ref 4,6) are in excellent agreement and the average value is Recommended. The remaining datum at 273K must be regarded as Tentative in the absence of confirmatory data.

TABLE 3: Recommended (*R*) and Tentative Values of the Solubility of Water (2) in *o*-Xylene (1)

T/K	Solubility values		
	Reported values 10 <sup>2</sup> g(2)/100g sln	"Best" values 10 <sup>2</sup> g(2)/100g sln	10 <sup>3</sup> x <sub>2</sub>
273	1.85 (ref 6)	1.9	1.1
298	4.5 (ref 4), 4.56 (ref 6)	4.5 ( <i>R</i> )	2.6 ( <i>R</i> )

(continued next page)

COMPONENTS: (1) <i>o</i> -Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	EVALUATOR: G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.  July 1985
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## CRITICAL EVALUATION: (continued)

At 298K, the data of McAuliffe (ref 3), Sutton and Calder (ref 7), Price (ref 8) and Sanemasa *et al.* (ref 10) are in excellent agreement and their average is Recommended. The values of Andrews and Keefer (ref 1) and Polak and Lu (ref 6) are markedly higher ( $>3\sigma_n$ ) and are rejected.

At other temperatures only the data of Sanemasa *et al.* (ref 10) are available except for the 273K datum of Polak and Ly (ref 6). These data are therefore regarded as Tentative.

Selected data are plotted in Figure 1.

TABLE 2: Recommended (R) and Tentative Solubility Values of  
*o*-Xylene (1) in Water (2)

T/K	Solubility values		
	Reported values 10 <sup>2</sup> g(1)/100g sln	"Best" values ( $\pm \sigma_n$ ) <sup>a</sup> 10 <sup>2</sup> g(1)/100g sln	10 <sup>5</sup> x <sub>1</sub>
273	1.42 (ref 5)	1.4	2.4
288	1.68 (ref 10)	1.7	2.9
298	1.75 (ref 3), 1.705 (ref 7), 1.67 (ref 8), 1.79 (ref 10)	1.73 $\pm$ 0.05 (R)	2.93 (R)
308	1.98 (ref 10)	2.0	3.4
318	2.14 (ref 10)	2.1	3.6

<sup>a</sup> Obtained by averaging where appropriate;  $\sigma_n$  has no statistical significance.

(continued next page)

<b>COMPONENTS:</b> (1) <i>o</i> -Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>EVALUATOR:</b> G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.  July 1985
<b>CRITICAL EVALUATION: (continued)</b>  <b>REFERENCES</b>  1. Andrews, L.J.; Keefer, R.M. <i>J. Am. Chem. Soc.</i> <u>1949</u> , <i>71</i> , 3644-7. 2. Guseva, A.N.; Parnov, E.I. <i>Vestn. Mosk. Univ. Khim.</i> <u>1963</u> , <i>18</i> , 76-9. 3. McAuliffe, C. <i>Nature</i> <u>1963</u> , <i>200</i> , 1092-3; <i>J. Phys. Chem.</i> <u>1966</u> , <i>70</i> , 1267-72. 4. Hoegfeldt, E.; Bolander, B. <i>Ark. Kemi</i> <u>1964</u> , <i>21</i> , 161-86. 5. Alwani, Z.; Schneider, G.M. <i>Ber. Bunsenges.</i> <u>1969</u> , <i>73</i> , 294-301. 6. Polak, J.; Lu, B. C-Y. <i>Can. J. Chem.</i> <u>1973</u> , <i>51</i> , 4018-23. 7. Sutton, C.; Calder, J.A. <i>J. Chem. Eng. Data</i> <u>1975</u> , <i>20</i> , 320-2. 8. Price, L.C. <i>Am. Assoc. Petrol. Geol. Bull.</i> <u>1976</u> , <i>60</i> , 213-44; see also Ph.D. Dissertation, <u>1973</u> , Univ. California, Riverside, CA, U.S.A., quoted in ref 10. 9. Krzyzanowska, T.; Szeliga, J. <i>Nafta (Katowice)</i> <u>1978</u> , <i>34</i> , 413-7. 10. Sanemasa, I., Araki, M.; Deguchi, T.; Nagai, H. <i>Bull. Chem. Soc. Jpn.</i> <u>1982</u> , <i>55</i> , 1054-62.  <b>ACKNOWLEDGEMENT</b>  The Evaluator thanks Dr Brian Clare for the graphics.	

<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Andrews, L.J.; Keefer, R.M. <i>J. Am. Chem. Soc.</i> <u>1949</u> , 71, 3644-77.
<b>VARIABLES:</b> One temperature: 25°C	<b>PREPARED BY:</b> A. Maczynski and Z. Maczynska
<b>EXPERIMENTAL VALUES:</b> The solubility of o-Xylene in water at 25°C was reported to be 0.0204 g(l)/100 g sln. The corresponding mole fraction, $x_1$ , calculated by the compilers is $3.46 \times 10^{-5}$ .	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> A mixture of (1) and (2) was rotated for twenty hours in a constant temperature bath at 25°C. A sample (5-20 mL) of the aqueous phase was withdrawn and extracted with a measured volume of hexane (10-50 mL) by shaking in a glass-stoppered Erlenmeyer flask. Next, the absorbance of the hexane phase was measured against a hexane blank on the Beckman spectrophotometer.	<b>SOURCE AND PURITY OF MATERIALS:</b> (1) Eastman Kodak Co. best grade; fractionally distilled; b.p. range 144.3-144.5°C. (2) Not specified.
	<b>ESTIMATED ERROR:</b> Not specified.
	<b>REFERENCES:</b>

<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Guseva, A.N.; Parnov, E.I. <i>Vestn. Mosk. Univ. Khim.</i> <u>1963</u> , 18, 76-9.															
<b>VARIABLES:</b> Temperature: 139-251°C	<b>PREPARED BY:</b> A. Maczynski and Z. Maczynska															
<b>EXPERIMENTAL VALUES:</b>  <p style="text-align: center;">Solubility of o-xylene in water</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>t/°C</u></th> <th style="text-align: center;"><u>g(l)/100 g sln</u></th> <th style="text-align: center;"><u>10<sup>4</sup>x<sub>1</sub> (compiler)</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">139</td> <td style="text-align: center;">0.047</td> <td style="text-align: center;">0.80</td> </tr> <tr> <td style="text-align: center;">162</td> <td style="text-align: center;">0.093</td> <td style="text-align: center;">1.58</td> </tr> <tr> <td style="text-align: center;">207</td> <td style="text-align: center;">0.407</td> <td style="text-align: center;">6.93</td> </tr> <tr> <td style="text-align: center;">251</td> <td style="text-align: center;">0.960</td> <td style="text-align: center;">16.42</td> </tr> </tbody> </table>		<u>t/°C</u>	<u>g(l)/100 g sln</u>	<u>10<sup>4</sup>x<sub>1</sub> (compiler)</u>	139	0.047	0.80	162	0.093	1.58	207	0.407	6.93	251	0.960	16.42
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<b>AUXILIARY INFORMATION</b>																
<b>METHOD/APPARATUS/PROCEDURE:</b> The measurements were made in sealed glass tubes. No details were reported in the paper.	<b>SOURCE AND PURITY OF MATERIALS:</b> (1) source not specified; n <sub>D</sub> <sup>20</sup> 1.5054. (2) doubly distilled.  <b>ESTIMATED ERROR:</b> not specified.  <b>REFERENCES:</b>															

<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> McAuliffe, C. <i>Nature (London)</i> <u>1963</u> , 200, 1092-3.
<b>VARIABLES:</b> One temperature: 25°C	<b>PREPARED BY:</b> A. Maczynski and Z. Maczynska
<b>EXPERIMENTAL VALUES:</b> The solubility of o-Xylene in water at 25°C was reported to be 0.0175 g(1)/100 g sln.  The corresponding mole fraction, $x_1$ , calculated by the compilers is $2.97 \times 10^{-5}$ .	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> The saturated solution of (1) in (2) was prepared by either shaking vigorously on a reciprocal shaker or stirring for several days with a magnetic stirrer. A 0.05 mL or 0.10 mL sample of the hydrocarbon-saturated water was injected directly into a gas liquid chromatograph.	<b>SOURCE AND PURITY OF MATERIALS:</b> (1) Phillips Petroleum Co.; 99+%; used as received. (2) Distilled.  <b>ESTIMATED ERROR:</b> Temp. ±1.5°C Soly. 0.0008 (std. dev. of mean)  <b>REFERENCES:</b>

<b>COMPONENTS:</b>  (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b>  Hoegfeldt, E.; Bolander, B. <i>Ark. Kemi</i> , <u>1964</u> , <i>21</i> , 161-86.
<b>VARIABLES:</b>  One temperature: 25°C	<b>PREPARED BY:</b>  A. Maczynski and Z. Maczynska
<b>EXPERIMENTAL VALUES:</b>  The solubility of water in o-Xylene was reported to be 0.022 mol(2) L sln.  The corresponding mass percent and mol fraction, $x_2$ , calculated by the compilers are 0.045 g(2)/100 g sln and 0.0026.  The assumption that 1.00 L sln = 876 g sln was used in the calculation.	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b>  The water determination was carried out according to Johansson's modification of the Karl Fischer titration in ref 1, 2.	<b>SOURCE AND PURITY OF MATERIALS:</b>  (1) Fluka; 0.7% of (m-p) xylene, 0.07% of ethylbenzene; purity 99.0%; used as received.  <b>ESTIMATED ERROR:</b> Temp. ±0.3 C Soly. ±0.002 mol(2) L <sup>-1</sup> sln (type of error not specified)  <b>REFERENCES:</b> 1. Hardy, C.J.; Greenfield, B.F.; Scargill, D. <i>J. Chem. Soc.</i> <u>1961</u> , 90. 2. Johansson, A. <i>Sv. Papperstidn.</i> <u>1947</u> , 11B, 124.



<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Polak, J.; Lu, B.C.-Y. <i>Can. J. Chem.</i> <u>1973</u> , <i>51</i> , 4018-23.																								
<b>VARIABLES:</b> Temperature: 0-25°C	<b>PREPARED BY:</b> A. Maczynski and Z. Maczynska																								
<b>EXPERIMENTAL VALUES:</b>  <div style="text-align: center;">Solubility of o-xylene in water</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">t/°C</th> <th style="text-align: center;">mg(1)/kg(2)</th> <th style="text-align: center;">g(1)/100 g sln (compiler)</th> <th style="text-align: center;">10<sup>5</sup>x<sub>1</sub> (compiler)</th> </tr> </thead> <tbody> <tr> <td>0 (a)</td> <td style="text-align: center;">142 (c)</td> <td style="text-align: center;">0.0142</td> <td style="text-align: center;">2.41</td> </tr> <tr> <td>25 (b)</td> <td style="text-align: center;">213 (c)</td> <td style="text-align: center;">0.0213</td> <td style="text-align: center;">3.61</td> </tr> </tbody> </table>  <div style="text-align: center;">Solubility of water in o-xylene</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">t/°C</th> <th style="text-align: center;">mg(2)/kg(1)</th> <th style="text-align: center;">g(2)/100 g sln (compiler)</th> <th style="text-align: center;">10<sup>3</sup>x<sub>2</sub> (compiler)</th> </tr> </thead> <tbody> <tr> <td>0 (a)</td> <td style="text-align: center;">185 (d)</td> <td style="text-align: center;">0.0185</td> <td style="text-align: center;">1.09</td> </tr> <tr> <td>25 (b)</td> <td style="text-align: center;">456 (e)</td> <td style="text-align: center;">0.0456</td> <td style="text-align: center;">2.68</td> </tr> </tbody> </table>  a-e See "Estimated Error"		t/°C	mg(1)/kg(2)	g(1)/100 g sln (compiler)	10 <sup>5</sup> x <sub>1</sub> (compiler)	0 (a)	142 (c)	0.0142	2.41	25 (b)	213 (c)	0.0213	3.61	t/°C	mg(2)/kg(1)	g(2)/100 g sln (compiler)	10 <sup>3</sup> x <sub>2</sub> (compiler)	0 (a)	185 (d)	0.0185	1.09	25 (b)	456 (e)	0.0456	2.68
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<b>AUXILIARY INFORMATION</b>																									
<b>METHOD/APPARATUS/PROCEDURE:</b>  Approximately 50 mL of (1) together with (2) were placed in a 125 mL Hypo-vial which was closed with a teflon coated rubber septum and placed in a constant-temperature water bath. The system was stirred magnetically for 24 hr and left in the bath for 3 days or was kept in the bath without stirring for 7 days, before samples were taken for analysis. The solubility of water in the organic layer was determined by Karl Fischer titration and the solubility of hydrocarbon in the water layer was determined by gas chromatography.	<b>SOURCE AND PURITY OF MATERIALS:</b>  (1) Eastman Organics, pure grade reagent; shaken three times with distilled water.  (2) distilled.  <b>ESTIMATED ERROR:</b> temp. (a) ± 0.02°C, (b) ± 0.01°C soly. (c) ± 1.7%, (d) ± 4.7%, (e) ± 3.1% (from two or three determinations)  <b>REFERENCES:</b>																								

<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Sutton, C.; Calder, J.A.  <i>J. Chem. Eng. Data</i> 1975, 20, 320-2.
<b>VARIABLES:</b> One temperature: 25°C	<b>PREPARED BY:</b> A. Maczynski and Z. Maczynska
<b>EXPERIMENTAL VALUES:</b>  The solubility of o-xylene in water at 25°C was reported to be 170.5 mg(1)/kg(2). The corresponding mass percent and mole fraction, $x_1$ , calculated by the compilers are 0.01705 g(1)/100 g sln and $2.892 \times 10^{-5}$ .	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> The concentration of (1) in (2) was determined by gas chromatography.	<b>SOURCE AND PURITY OF MATERIALS:</b> (1) Aldrich Chemical Co. or Matheson Coleman and Bell 99+%.  (2) distilled.  <b>ESTIMATED ERROR:</b> temp. $\pm 0.1^\circ\text{C}$ soly. 2.5 mg(1)/kg(2) (the standard deviation of the mean for six replicates)  <b>REFERENCES:</b>

<b>COMPONENTS:</b>  (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [97-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b>  Price, L.C.  <i>Am. Assoc. Petrol. Geol. Bull.</i> <u>1976</u> , 60, 213-44.
<b>VARIABLES:</b>  One temperature: 25°C	<b>PREPARED BY:</b>  M.C. Haulait-Pirson
<b>EXPERIMENTAL VALUES:</b>  <p>The solubility of o-xylene in water at 25°C and at system pressure was reported to be 167.0 mg(1)/kg(2). The corresponding mass percent and mole fraction, <math>x_1</math>, calculated by the compiler are 0.0167 g(1)/100 g sln and <math>2.83 \times 10^{-5}</math>.</p>	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b>  <p>The solubility was determined at laboratory temperatures by use of screw-cap test tubes. The (1) phase floated on top of the water and insured saturation of the (2) phase in 2 to 4 days. Analyses were carried out by GSC using a Hewlett-Packard model 5751 gas chromatograph with dual-flame ionization detectors. Many details are given in the paper.</p>	<b>SOURCE AND PURITY OF MATERIALS:</b>  (1) Phillips Petroleum Company; Chemical Samples Company or Aldrich Chemical Company; 99+%.  (2) distilled.
	<b>ESTIMATED ERROR:</b>  temp. $\pm 1^\circ\text{C}$ soly. $\pm 4.0$ mg(1)/kg(2)
	<b>REFERENCES:</b>

<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [97-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b> Krzyzanowska, T.; Szeliga, J. <i>Nafta (Katowice)</i> , <u>1978</u> , <i>12</i> , 413-7.
<b>VARIABLES:</b> One temperature: 25°C	<b>PREPARED BY:</b> M.C. Haulait-Pirson
<b>EXPERIMENTAL VALUES:</b>  <p>The solubility of o-xylene in water at 25°C was reported to be 167.0 mg(1)/kg(2).</p> <p>The corresponding mass percent and mole fraction, <math>x_1</math>, calculated by compiler are 0.0167 g(1)/100 g sln and <math>2.83 \times 10^{-5}</math>.</p> <p>Editor's Note: Based on the results for this and other hydrocarbon-water systems, uncertainty exists about whether the datum compiled here is independent of that of Price for the same system (see previous page).</p>	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> <p>The saturated solutions of (1) in (2) were prepared in two ways. First, 200 <math>\mu</math>L of (1) was injected into 20 mL of (2) and thermostatted at 25°C. Second, the mixture of (1) and (2) as above was thermostatted at 70°C and then cooled to 25°C. The time required to obtain equilibrium was three weeks. The solubility of (1) in (2) was measured by glc. A Perkin-Elmer model F-11 gas chromatograph equipped with a 100-150 mesh Porasil column (70°C) and a flame ionization detector was used. Saturated solutions of heptane in (2) were used as standard solutions.</p>	<b>SOURCE AND PURITY OF MATERIALS:</b> (1) not specified. (2) not specified.  <b>ESTIMATED ERROR:</b> soly. 4.2 mg(1)/kg(2) (standard deviation from 7-9 determinations).  <b>REFERENCES:</b>

<b>COMPONENTS:</b>  (1) <i>o</i> -Xylene; C <sub>8</sub> H <sub>10</sub> ; [97-47-6] (2) Water; H <sub>2</sub> O; [7732-18-5]	<b>ORIGINAL MEASUREMENTS:</b>  Sanemasa, I.; Araki, M.; Deguchi, T.; Nagai, H. <i>Bull. Chem. Soc. Jpn.</i> <u>1982</u> , <i>55</i> , 1054-62.																				
<b>VARIABLES:</b>  Temperature: 15-45°C	<b>PREPARED BY:</b>  G.T. Hefter																				
<b>EXPERIMENTAL VALUES:</b>  <p style="text-align: center;">The solubility of <i>o</i>-xylene in water</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>t</i> / °C</th> <th style="text-align: center;">10<sup>3</sup> mol(1)/dm<sup>3</sup> sln</th> <th style="text-align: center;">g(1)/100 g sln (compiler)<sup>a</sup></th> <th style="text-align: center;">10<sup>5</sup> <math>\alpha_1</math> (compiler)<sup>a</sup></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">15</td> <td style="text-align: center;">1.58 ± 0.11</td> <td style="text-align: center;">0.0168</td> <td style="text-align: center;">2.85</td> </tr> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">1.68 ± 0.06</td> <td style="text-align: center;">0.0179</td> <td style="text-align: center;">3.04</td> </tr> <tr> <td style="text-align: center;">35</td> <td style="text-align: center;">1.85 ± 0.02</td> <td style="text-align: center;">0.0198</td> <td style="text-align: center;">3.35</td> </tr> <tr> <td style="text-align: center;">45</td> <td style="text-align: center;">2.00 ± 0.02</td> <td style="text-align: center;">0.0214</td> <td style="text-align: center;">3.64</td> </tr> </tbody> </table> <p><sup>a</sup> Assuming solution densities to be the same as those of pure water at the same temperature (ref 1).</p>		<i>t</i> / °C	10 <sup>3</sup> mol(1)/dm <sup>3</sup> sln	g(1)/100 g sln (compiler) <sup>a</sup>	10 <sup>5</sup> $\alpha_1$ (compiler) <sup>a</sup>	15	1.58 ± 0.11	0.0168	2.85	25	1.68 ± 0.06	0.0179	3.04	35	1.85 ± 0.02	0.0198	3.35	45	2.00 ± 0.02	0.0214	3.64
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<b>METHOD/APPARATUS/PROCEDURE:</b>  The apparatus is similar to an earlier design (ref 2) and is described in detail in the paper. 100-200 cm <sup>3</sup> of (2) and 10-20 cm <sup>3</sup> of liquid (1) were placed in separate but connected thermostatted flasks. After thermal equilibrium was established a recirculating stream of air was used to vaporize liquid (1) and to transport the vapor to the flask containing (2). Five 10 cm <sup>3</sup> aliquots were withdrawn into separatory funnels. The concentration of (1) in (2) was then determined by extraction into chloroform followed by UV-spectrophotometry. Standards for the spectrophotometry were prepared by weight from pure liquid solutes.	<b>SOURCE AND PURITY OF MATERIALS:</b>  (1) Analytical reagent grade (Wako Pure Chemical Ind. Ltd.), stated purity 98.0%, used without further purification.  (2) Redistilled; no further details given.  <b>ESTIMATED ERROR:</b>  soly. see table, type of error not specified. temp. ± 0.1°C.  <b>REFERENCES:</b>  1. Kell, G.S. <i>J. Chem. Eng. Data</i> <u>1975</u> , <i>20</i> , 97.  2. Sanemasa, I.; Araki, M.; Deguchi, Y.; Nagai, H. <i>Chem. Lett.</i> <u>1981</u> , 225-8.																				

<b>COMPONENTS:</b> (1) o-Xylene; C <sub>8</sub> H <sub>10</sub> ; [95-47-6] (2) Artificial seawater (ref 1)	<b>ORIGINAL MEASUREMENTS:</b> Sutton, C.; Calder, J.A. <i>J. Chem. Eng. Data</i> <u>1975</u> , 20, 320-2.
<b>VARIABLES:</b> One temperature: 25.0°C One salinity: 34.5 g salts/kg sln	<b>PREPARED BY:</b> M. Kleinschmidt
<b>EXPERIMENTAL VALUES:</b>  The solubility of o-xylene in artificial seawater is reported to be 129.6 mg(l)/kg sln. The corresponding mass percent and mole fraction, $x_1$ calculated by the compiler are 0.01296 g(l)/100 g sln and $2.26 \times 10^{-5}$ assuming the artificial seawater composition of ref 1.	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> A test tube containing (1) was placed in a flask containing (2) thus allowing for equilibration through the vapor phase. The saturated solution was extracted with hexane and analyzed by gas chromatography.	<b>SOURCE AND PURITY OF MATERIALS:</b> (1) from either Aldrich Chemical Co. or Matheson Coleman and Bell, 99+% pure. (2) made from doubly distilled water and salts 99+% pure.  <b>ESTIMATED ERROR:</b> temp. $\pm$ 0.1°C soly. 1.8 (std. dev.)  <b>REFERENCES:</b> 1. Lyman, J.; Fleming, R.H.; <i>J. Mar. Res.</i> <u>1940</u> , 3, 135.